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Manufacturing Technician Worksheet

Name: _____

Manual Cylinder Measurements: (only measure TWO of the following)

Cylinder 1: 80.003mm Cylinder 2: 80.010mm Cylinder 3: 80.009mm Cylinder 4: 80.001mm
Are these measurements within one tenth of a millimeter of those taken by the robot, Callibot? Yes No

Voltages Across Fuses:

Conveyor belt motor: 0.008 Lift motor: 0.007 Robot (Calibot): 0.006

Timing: This looks complicated, but is really pretty simple. Calculate the interval (I) between the start times of each engine block movement. Record the interval below. The first calculation has been done for you as an example, and matches the highlighted (first) set of times on the screen.

Column 1 Interval of Time between Block Transfer Motor In and Lift Motor Up	Column 2 Interval of Time between Lift Motor Up and Block Transfer Motor Out	Column 3 Interval of Time between Block Transfer Motor Out and Lift Motor Down	Column 4 Time between Lift Motor Down and Limit Switch 5 (lift is at bottom of shaft)	Total # of Seconds
1st movement - 6:40:35 2nd movement – 6:40:43 Interval = **8 sec**	Interval = **10 sec**	I = **8 sec**	I = **10 sec**	36 sec
I = 8 sec	I = 10 sec	I = 8 sec	I = 10 sec	36 sec
I = 8 sec	I = 10 sec	I = 8 sec	I = 10 sec	36 sec
I = 8 sec	I = 10 sec	I = 8 sec	I = 10 sec	36 sec

Space for calculations:

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Describe the problem with limit switch 3:
The arm of the switch does not return all the way to vertical after an engine block passes

Angle Measurements:

The angle of the limit switch arm should be 90°. Angle measurement taken with angle ruler: __60°_____

What is the highest tolerance listed on the chart? __20°_____

Given the highest tolerance, what is the lowest acceptable number of degrees the angle measurement could be for this limit switch to still work? _70°_____
How many degrees below the lowest acceptable number is the angle measured? __10°____ This is the difference to enter on the screen when Jerome asks for the difference between the highest tolerance and the measured angle.

Allowable tolerance is 22% off vertical. What is the percent the actuator arm is off from true vertical? ___33%____

Repair and Replacement Tracking Chart
Print out for which sections of the Line? **__E12_**
Print out for what dates? **Last 30 days**

Line Section	Part Repaired or Replaced	Brand/Model #	Down Time in Hours	Running Totals
E12	Limit Switch	Switcheroo LS7400	0.5	
E12	Limit Switch	Switcheroo LS7400	0.75	
E12	Limit Switch	Switcheroo LS7400	1.5	
E12	Limit Switch	Signals'R'Us	1	
E12	Optical switch	Acme	1.5	
E12	Limit Switch	Switcheroo LS7400	0.5	
E12	Optical switch	Acme	0.5	
E12	Limit Switch	Switcheroo LS7400	0.75	
E12	Limit Switch	Signals'R'Us	0.75	
E12	Limit Switch	Switcheroo LS7400	1.5	
E12	Limit Switch	Signals'R'Us	0.75	
E12	Optical Switch	Acme	1.5	
E12	Limit Switch	Switcheroo LS7400	1	
	Grand total	*(round to whole #)*	6.5	Rounded to 7 hours

Calculations to estimate the cost of the Switcheroo LS7400 to the company in the last 30 days:

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